

1 ABSTRACT OF THE DISCLOSURE

2 The invention includes methods of forming aluminum containing lines  
3 having titanium nitride containing layers thereon, and preferably by physical  
4 vapor deposition. In one aspect, a first layer including at least one of  
5 elemental aluminum or an aluminum alloy is formed over a substrate. A  
6 second layer including an alloy of titanium and the aluminum from the first  
7 layer is formed. The alloy has a higher melting point than that of the first  
8 layer. A third layer including titanium nitride is formed over the second  
9 layer. The first, second and third layers are formed into a conductive line.  
10 In one aspect, a method of forming an aluminum containing line having a  
11 titanium nitride containing layer thereon includes physical vapor depositing a  
12 first layer having at least one of elemental aluminum or an aluminum alloy  
13 over a substrate. At least one of elemental titanium or a titanium alloy is  
14 physical vapor deposited on the first layer, and formed therefrom is a second  
15 layer comprising an alloy of titanium and the aluminum from the first layer.  
16 The alloy has a higher melting point than that of the first layer. A third  
17 layer comprising titanium nitride is physical vapor deposited over the second  
18 layer. The first, second and third layers are photopatterned into a conductive  
19 line.  
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